

REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars:

Rejection of claims 2-6 and 9-13 under 35 U.S.C. § 103(a)

Claims 2-6 and 9-13 presently stand rejected as being unpatentable over Connors et al (U.S. 5,761,070) in view of Geiger et al (U.S. 5,544,757). This rejection is respectfully traversed for the following reasons.

The present invention, as set forth in independent claim 12 and 13, relates to a method and system for determining the wood surface profile of a log end. An optical image analysis system is used to perform an optical image analysis for determining positions of individual points of a wood surface profile from an optical image of the log end. At least one further measurement system is used to determine positions of individual points on the log end, and the positions determined from each of the optical image analysis and the at least one further measurement system are combined to create an adequate wood surface profile.

Referring to the present application (at line 25 of page 4), the term ***log end*** refers to a ***crosscut section including wood and bark***. The term wood surface refers to the outer surface of the section exclusive of the bark or, in other words, the exterior surface of a log (not the crosscut face) that would result upon removal of the bark.

Determining the wood surface profile, which is essentially the circumferential shape of a log assuming the removal of the bark, contributes to determination of saw yield of the log. Accordingly, the purpose of the present invention is to improve the yield in a saw mill by determining the wood surface profile, which may be used to determine how best to saw an individual log.

As discussed in the present application, the present invention is an improvement over conventional methods wherein a measurement based on the bark surface is employed for determining saw yields. Clearly, since the bark itself does not contribute to the saw

yield of the log, conventional methods using the bark surface inherently include an error according to the bark thickness. Since the bark itself does not contribute to the saw yield of the log, and because of possible variations in thickness of the bark, the measurement based on the bark surface may not reveal how best to saw an individual log based on the usable wood beneath the bark.

It is respectfully submitted that the present invention as set forth in either of independent claims 12 and 13 is not taught or suggested by Conners, or Geiger, or any combination thereof. Moreover, neither of the cited references can be modified to arrive at the present invention based on any teaching or suggestion contained within the references.

Conners discloses a system for automatic color and grain sorting of wood materials. Clearly, Conners is directed to such sorting of cut lumber sheets or boards. (see *Conners*; col. 17, lines 30-50). There is no teaching or suggestion of any kind that Conners is useful (or usable) for any measurement related to a *log end*. Moreover, since the term log end is defined within the present specification as inclusive of both wood and bark, it must be further noted that Conners, being directed to cut lumber sheets or boards, makes no mention of bark whatsoever.

Therefore, Conners simply cannot teach or suggest the limitations clearly set forth in claims 12 and 13 which relate to a log end or to individual points on a log end.

Conners fails to disclose or suggest an optical image analysis system for determining point positions of individual points on a wood surface profile, and at least one further measurement system for determining positions of individual points on the log end, wherein positions from the optical analysis system and the at least one further measurement system are combined to create a wood surface profile.

Instead, Conners teaches a color sorting system and a grain sorting system. Neither of these is a system for determining the position of individual points of a wood surface profile. Furthermore, there is no teaching or suggestion that the data resulting

from the color sorting system and from the grain sorting system are ever combined to produce an adequate wood surface profile.

There is no teaching or suggestion that the color sorting system ever determines any point positions at all. While the examiner states that the grain sorting function “is done by determining the edges of the log,” this is simply not a reasonable interpretation either of the teachings of Conners or of the presently claimed invention. As noted above, Conners is not directed to measurements relating to a log or a log end. As noted in the present specification, a log end includes both wood and bark, but Conners teaches a sorting method for a wood sheet or board that does not include bark, and is not a log that includes bark.

Also, the examiner’s statement that “grain sorting is done by determining the edges of the log” misinterprets the teachings of Conners. Conners does not determine edges of a log or log end. Conners simply uses an “edge detector” to determine image “edges” which are grain lines within the surface of the wood being tested, and are *specifically not* the outer perimeter of the board. Conners clearly states that, regarding edge detection, “this application should not generate any edge points between background and part face.” (Conners; col. 39, lines 61-63). Thus, the “edge detection” is not concerned with finding actual edges of the work piece, or “edges” of a log end that define a wood surface profile (beneath a bark). Edges are simply image artifacts that indicate grain lines.

There is no teaching or suggestion that the edge detection ever results in positional information of plural single, or discrete, points of a wood surface profile. In fact, there is no teaching or suggestion that any positional information (relating to the position of points on the part being evaluated for sorting). Information derived from the “edge detection” is simply compared with prior information obtained during a training exercise to identify a grain type or pattern based on similarity between “signatures” that result from the “edge detection” algorithms.

The examiner correctly notes that “Conners does not expressly disclose using at least one further measurement system to determine position [of] the individual points on

the log end, and combining the position determined from said optical image analysis system and the positions determined from the said at least one further measurement system to create an adequate wood surface profile.” The examiner attempts to find such a teaching in Geiger, and proposes that “it would have been obvious to a person of ordinary skill in the art to combine and incorporate the teachings taught by Geiger into the system of Connors.”

However, it is respectfully submitted that Geiger entirely fails to disclose or suggest any sort of a system to determine a position of individual points on a log end. Referring to a passage of Geiger that the examiner cites in support of his proposition (*Geiger*; col. 3, lines 5-45), there is no such teaching or suggestion of any sort of a system to determine a *position of individual points on a log end*. Instead, all that is taught is results of a brightness measurement may control parts of a processing installation either up or down stream of the brightness measurement. However, nowhere at all does Geiger offer any suggestion that the brightness measurement is, produces, or relates at all to any determination of the position of any point on the log surface which is subjected to the brightness measurement.

Instead of determining positions of individual points of a wood surface profile, Geiger simply employs a device “capable of measuring the intensity of reflected light from the logs.” (*Geiger*; col. 6, lines 21-23). The device is arranged to measure the brightness “in a plurality of viewing fields [...]” (*Geiger*; col. 6, lines 23-24). A field is not a point, and therefore Geiger cannot be construed to provide any positional information regarding individual points. Further, there is no teaching or suggestion that the brightness, which relates to a field of view and not individual points within the field of view, can even be evaluated to provide positional information regarding any image artifact of the log itself.

At best, perhaps positional information of the (camera) device itself (and not positional information of points on the log) may be usable. For example, Geiger states that “a distance detecting device 38 is positioned adjacent to the camera to determine the distance from the camera to the uppermost surface of the log 8.” (*Geiger*; col. 7, lines 48-51).

Because Geiger fails to disclose or suggest *any sort* of a system to determine a position of individual points on a log end, Geiger cannot be construed in any way as teaching *either* an optical image analysis system that is used to perform an optical image analysis for determining positions of individual points of a wood surface profile from an optical image of the log end *or* at least one further measurement system to determine positions of individual points on a log end.

It is respectfully submitted that for at least these reasons, Connors and Geiger, even taken together, fail to disclose or suggest the claimed invention because neither of the references discloses or suggests the optical image analysis system that is used to perform an optical image analysis for determining positions of individual points of a wood surface profile from an optical image of the log end or the at least one further measurement system to determine positions of individual points on a log end. Because neither of the cited references teaches or suggests these claimed elements, the combination of the references cannot.

Therefore, the cited references fail to provide a prima facie basis for obviousness of the claimed invention, as set forth in independent claims 12 and 13. Accordingly, claims 12 and 13, and their respective dependent claims 2-6 and 9-11, are allowable over the cited references. Withdrawal of the rejection is respectfully requested.

Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is requested that claims 2-6 and 9-13 be allowed and the application be passed to issue.


Application No.: 09/926,790
Examiner: O. R. Mistry
Art Unit: 2625

If any issues remain that may be resolved by a telephone or facsimile communication with the Applicant's attorney, the Examiner is invited to contact the undersigned at the numbers shown.

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Respectfully submitted,


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